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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/612,543	07/07/2000	Makoto Funabashi	1982-0153P	9387
7590	08/07/2006			
Birch Stewart Kolasch & Birch LLP P O Box 747 Falls Church, VA 22040-0747			EXAMINER LIN, JAMES	
			ART UNIT 1762	PAPER NUMBER

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/612,543	Applicant(s) FUNABASHI, MAKOTO	
	Examiner Jimmy Lin	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-4,9-12,14-20 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-19 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,9-12,20 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/21/06 has been entered.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 3-4, 9-12, and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation of "a ratio of 1:8 and 1:40" (claim 1) is indefinite. Is the ratio considered by weight or mole? For the purpose of this examination, it will be interpreted to be inclusive of both.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weiss et al. (U.S. Patent 4,028,550) in view of Leblans et al. (U.S. Patent 5,360,578).

Weiss teaches dispersing a binder and a barium fluorohalide phosphor in a dispersion medium (col. 3, line 65-col. 4, line 15), wet classifying the phosphor (col. 4, lines 10-12), and

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applying the material to a support and drying to form a phosphor layer (col. 4, lines 31-41). Applicant has defined a “soluble” binder as “having solubility sufficient for preparing the phosphor layer coating liquid which can be applied for forming a phosphor layer” (paragraph bridging pages 12 and 13 of the specification). Thus, because the binder of Weiss is applied to form a phosphor layer, it meets Applicant’s definition of soluble.

Weiss does not teach that the specific order of adding phosphor to the dispersion medium, wet classifying, and then adding the binder. However, it has long been settled that the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See, for instance, *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) and MPEP 2144.04.II.C. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed the steps in the order of adding the phosphor, wet classifying, and adding the binder instead of adding the binder, adding the phosphor and wet classifying with the expectation of similar results and with a reasonable expectation of success because the final coating slurry would have been substantially identical.

Weiss also does not teach that the phosphor is calcined. In fact, Weiss is silent as to the method of preparing the barium fluorohalide phosphor. Leblans teaches that barium fluorohalide phosphors may be prepared by mixing the appropriate components and then calcining (col. 6, line 50-col. 7, line 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed the process of Weiss using a calcined phosphor with a reasonable expectation of success because Leblans teaches that calcining is a conventional method of making such phosphors.

The particles are sieved by passing through meshes (col. 4, line 50-col. 5, line 7). Particles over 40 microns in size are undesired (col. 3, lines 30-42). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a maximum final mesh size of 40 microns, which is less than 50 microns, in order to achieve the desired particle size range.

Weiss teaches that the phosphor may be BaFCl:(.02)Eu (col. 2, lines 26-30)

6. Claims 1, 3-4, 9, 12, 20, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamil (U.S. Patent 5,772,916) in view of Arakawa et al. (U.S. Patent 6,031,236).

Jamil discloses a method of making a radiation image conversion panel (abstract), comprising the steps of:

- a) calcining a stimutable phosphor in a furnace for 1 to 4 hours, then cooling the phosphor until the phosphor temperature is below 100 °C (col. 8, lines 14-18; col. 9, lines 25-35);
- b) dispersing the calcined phosphor in methyl ethyl ketone (col. 11, lines 21-26 and stirring with a non-metallic stirrer to obtain a slurry (col. 11, lines 33-34);
- c) wet classifying wherein a final mesh in the wet classification is 20 µm (col. 11, lines 46-51);
- d) forming a slurry with the phosphor and a polyurethane binder (col. 12, lines 29-47), wherein the binder and the phosphor can be mixed with a weight ratio of up to 1:8.5 (col. 13, lines 14-24);
- e) applying the coating material to a support and drying to thereby form a phosphor layer (col. 13, lines 25-52).

Jamil does not explicitly teach that the phosphor remains in the slurry between steps (b) and (c) or that the stimutable phosphor is 10 to 300 parts by weight per 100 parts by weight of methyl ethyl ketone of the first slurry. Jamil teaches a drying step between steps (b) and (c) (col. 11, lines 58-62), but does not teach a criticality for drying the phosphor. In examples 1-3, the phosphors are dried only to determine the particle size distribution. The dried phosphor is reconstituted into a second slurry that comprises a binder. The second slurry can use the same solvent as the first slurry (col. 12, lines 29-38). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have kept the phosphor in the same slurry between steps (b) and (c) because Jamil teaches that the first and second slurry can use the same solvent and that the drying step is not critical. One would have been motivated to do so in order to reduce the number of steps in the process.

Jamil teaches that the second slurry the phosphor can be 171 to 570 parts by weight per 100 parts by weight of methyl ethyl ketone (col. 13, lines 17-24).

Jamil teaches that any stimutable phosphor may be used (col. 8, lines 14-18), but does not teach that the stimutable phosphor can be BaFBr:Eu, BaFI:Eu or a mixture thereof or that the calcining temperature can be 750-900 °C. However, Arakawa teaches that the stimutable phosphor can be BaFBr:.001Eu (example 1). The calcining temperature can be 750-850 °C

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(example 2). The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used BaFBr:001Eu as the particular stimutable phosphor in the process of Jamil with a reasonable expectation of success because Jamil teaches that any suitable stimutable phosphor may be used and because Arakawa teaches that such phosphors are suitable for making a radiation image storage panel.

Jamil teaches that a non-metallic stirrer can be used to obtain a slurry, as discussed above, but does not teach using a propeller to stir. However, Arakawa teaches that a propeller can be used to agitate the slurry (example 1). The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a non-metallic propeller to obtain the slurry of Jamil with a reasonable expectation of success because Jamil teaches that a non-metallic stirrer is preferred and because Arakawa teaches that a propeller can be used for such applications.

Claims 3-4,12: Jamil teaches that the wet classification step includes the step of decanting part of the slurry in order to separate agglomerated phosphors greater than about 20  $\mu\text{m}$ . The wet classification step is repeated several times (col. 11, lines 47-55). This step is performed before the step of adding the binder.

Claim 9: Jamil teaches that the wet classification step employs sieving (i.e., filtration) (col. 11, lines 47-51).

Claim 24: Jamil teaches that the substrate can be coated with a light reflection layer (col. 13, lines 56-65; col. 14, lines 21-26) and that a protective overcoat may be provided over the phosphor coating (col. 14, lines 30-32).

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jamil (U.S. Patent 5,772,916) and Arakawa et al. (U.S. Patent 6,031,236) as applied to claim 1 above, in view of Leblans et al. (U.S. Patent 5,360,578).

Jamil teaches a wet classification process that includes the step of sieving as discussed above, but does not teach employing the sieves arranged in a plurality of stages having decreasing mesh sizes. However, Leblans teaches that the particles may be sieved through a plurality of stages having decreasing mesh size (col. 4, line 56-col. 5, line 13). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have sieved the phosphor of Jamil and Arakawa through a plurality of stages having decreasing mesh sizes. One would have been motivated to do so in order to further filter the phosphor to get a more desirable particle size distribution.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jamil (U.S. Patent 5,772,916) and Arakawa et al. (U.S. Patent 6,031,236) as applied to claim 9 above, in view of Hultsch et al. (U.S. Patent 4,405,454).

Jamil and Arakawa is discussed above, but does not teach classification by pressure filtration. However, Hultsch teaches that pressure filtration is suitable method for classifying particles from dispersions (Abstract, col. 2, lines 56-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used pressure filtration as the particular wet classification method of Jamil and Arakawa with a reasonable expectation of success because Hultsch teaches that such methods are suitable for classifying particles from dispersions.

#### ***Allowable Subject Matter***

9. Claims 14-19 are allowed for the reasons already of record.

#### ***Response to Arguments***

10. Applicant's arguments, see pgs. 12-14, filed 6/21/06, with respect to the rejection(s) of claim(s) 1, 3-4, and 9-12 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Jamil '916 and Arakawa '236.

11. Applicant's arguments filed 6/21/06 have been fully considered but they are not persuasive.

Claim 20 as rejected by Weiss '550 and Leblans '578:

The Applicant argues that Weiss '550 does not calcine the stimuable phosphor (pg. 11). However, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Leblans '578 teaches that calcining barium fluorohalide phosphors is a conventional method of making stimuable phosphors, as discussed above.

The Applicant argues that the Declaration filed 4/12/05 has shown unexpected results showing the nonobviousness of changing the particular order of steps (pgs. 12-14). However, claim 20 is not commensurate in scope with the evidence of unexpected results because the binder is not required to be added into slurry formed from step (b).

The Applicant argues that the Declaration filed 4/12/05 has shown superior results when vigorous stirring is used as the particular method to stir the slurry, as opposed to the ball milling method of Weiss '550 (pgs. 14-15). However, a ball milling method can create such vigorous stirring when done at sufficient speeds.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rabatin (U.S. Patent 4,360,571, Example 1), Alles (U.S. Patent 2,819,183, col. 2, lines 1-22), and Rabatin (U.S. Patent 4,208,470, Example 1) also show examples of wet classification of slurries of a phosphor and a binder before applying them to form a panel.


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Thursday 8 - 5:30 and Friday 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7/26/06



**TIMOTHY MEEKS**  
**SUPERVISORY PATENT EXAMINER**